

CHAPTER 4. CONSULTATION AND COORDINATION

Preparers and Contributors

The following individuals served on the Interdisciplinary Team or were consultants for the Team during the development of the DEIS and FEIS:

Core Interdisciplinary Team Members

Anthony V. Scardina –Interdisciplinary Team Leader (July 2005 – May 2007) – Supervisor’s Office, ENF

Jason Nedlo –Interdisciplinary Team Leader (June 2007 – April 2008) – Supervisor’s Office, ENF

Katy Coulter – Acting Heritage Program Manager – Supervisor’s Office, ENF

Dawn Lipton – Forest Wildlife Biologist – Supervisor’s Office, ENF

Lester Lubetkin – Forest Recreation Officer – Supervisor’s Office, ENF

Amy Reid – Recreation Specialist – Supervisor’s Office, ENF

Bill Walker – Trails Manager – Supervisor’s Office, ENF

Christine Mai – Hydrologist (August 2005 – September 2007) – Supervisor’s Office, ENF

Steve Markman – Hydrologist (September 2007 – April 2008) – Supervisor’s Office, ENF

Debra Tatman – GIS Coordinator – Supervisor’s Office, ENF

Mike Taylor – Forest Botanist (August 2005 – December 2007) – Supervisor’s Office, ENF

Susan Durham – Assistant Forest Botanist (January 2008 – April 2008) Supervisor’s Office, ENF

Laura Hierholzer – NEPA Specialist – Supervisor’s Office, ENF

Support Interdisciplinary Team Members

Chuck Brickley – GIS Specialist – Supervisor’s Office, ENF

Gregory Connick – Roads Specialist – Supervisor’s Office, ENF

Dennis Cullen – Forest Patrol Captain – Supervisor’s Office, ENF

Casey Dabney – Student – Supervisor’s Office, ENF

Jennifer Ebert – District Wildlife Biologist – Pacific Ranger District, ENF

Matthew Eister – Cartographic Technician – Supervisor’s Office, ENF

Kristina Garcia –Range Specialist – Supervisor’s Office, ENF

Lorraine Gerchas – Right-of Way – Supervisor’s Office, ENF

Lauren Goschke – Project Intern – Supervisor’s Office, ENF

Ron Hancock – District OHV Manager – Placerville Ranger District, ENF

Erik Holst – Aquatics Biologist – Supervisor’s Office, ENF

Jessica Ilse – Wildlife Biologist – Pacific Ranger District, ENF
Gwyn Ingram – Wilderness Ranger – Pacific Ranger District, ENF
Melanie Hornsby – Recreation Assistant – Pacific Ranger District, ENF
Jon Jue – District Resource Staff Officer – Georgetown Ranger District, ENF
Dr. Thomas E. Koler – Forest Geologist, Supervisor’s Office, ENF
Lauren Krugman – Cartographic Technician – Supervisor’s Office, ENF
Chuck Loffland – District Wildlife Biologist – Amador Ranger District, ENF
Jeff Marsolais – Recreation Specialist – Pacific Ranger District, ENF
Jared McLachlan – GIS Specialist – Supervisor’s Office, ENF
Frank Mosbacher – Forest Public Affairs Officer – Supervisor’s Office, ENF
Austin Mulder – Cartographic Technician – Supervisor’s Office, ENF
Charis Parker – District Wildlife Biologist – Georgetown Ranger District, ENF
Debbie Parlin – GIS Database Specialist – Supervisor’s Office, ENF
Lynda Philipp – Editor, Consultant
Rich Platt – District Resource Staff Officer – Pacific Ranger District, ENF
Cindy Podsiadlo – Acting Range Specialist – Supervisor’s Office, ENF
Roger Poff – Soil Scientist, Consultant
Melanie Rossi – GIS Specialist – Supervisor’s Office, ENF
Mike Stroude – District OHV Manager – Amador Ranger District, ENF
Ken Surface – Right-of Way – Supervisor’s Office, ENF
Susan Yasuda – District Wildlife Biologist – Placerville Ranger District

Consultation

The Forest Service consulted the following individuals; federal, state, and local agencies; tribes; and non-Forest Service persons during the development of the DEIS and FEIS:

Federal, State, and Local Agencies

USDA Forest Service, Pacific Southwest Regional Office
Alpine County Board of Supervisors
Amador Country Board of Supervisors
El Dorado County Board of Supervisors
El Dorado County Parks and Recreation Department
El Dorado County Department of Transportation
Placer County Board of Supervisors
California Resource Agency
California Department of Parks and Recreation, Off-Highway Motor Vehicle Recreation Division
California Department of Fish and Game
California Fish and Game Commission
US Fish and Wildlife Service

Tahoe National Forest
Stanislaus National Forest
Lake Tahoe Basin Management Unit

Tribal Governments

Washoe Tribe of Nevada and California
Shingle Springs Rancheria
Jackson Rancheria
Ione Band of Miwok Indians
Foothill Indian Education Alliance

Distribution of the Final EIS

The FEIS was distributed to individuals who specifically requested a copy of the document or attended public meetings and received a copy. In addition, copies were made available at local libraries and were sent to numerous federal, state, and local agencies; federally recognized tribes; and organizations representing a wide range of views regarding travel management on the ENF. The FEIS was also available at the Eldorado National Forest's website at www.fs.fed.us/r5/eldorado.

Federal, State, and Local Agencies

USDA Forest Service, Pacific Southwest Regional Office
Alpine County Board of Supervisors
Amador Country Board of Supervisors
Eldorado County Board of Supervisors
Placer County Board of Supervisors
US Army Corps of Engineers
US Environmental Protection Agency
US Fish and Wildlife Service
California Department of Fish and Game
Central Valley Regional Water Quality Control Board

Literature Cited

- Ambuel, B. and S.A. Temple. 1983. Area-dependent changes in the bird communities and vegetation of southern Wisconsin forests. *Ecology* 64:1057-1068.
- AmphibiaWeb. 2007. AmphibiaWeb: Information on amphibian biology and conservation. [web application]. Berkeley, California. Website: <http://amphibiaweb.org/>
- Andren, H. 1994. Effects of habitat fragmentation on birds and mammals in landscapes with different proportions of suitable habitat: a review. *Oikos* 71:355-366.
- Anthony, R.G.; and F.B. Isaacs. 1989. Characteristics of bald eagle nest sites in Oregon. *Journal of Wildlife Management* 53(1): 148-159.
- Anthony, R.G., R.L. Knight, G.T. Allen, B.R. McClelland and J.I. Hodges. 1982. Habitat use by nesting and roosting bald eagles in the Pacific Northwest. *Trans. A. Am. Wildl. Natural Res. Conf.* 47:332-342.
- Arndt, W. 1965. The nature of mechanical impedance to seedlings by soil surface seals. *Austral. Jour. Soil Res.* 3:45-54.
- Ashton, D.T., A.J. Lind, and K.E. 1997. Western Pond Turtle (*Clemmys marmorata*); Natural History. Unpublished. USDA Forest Service, Pacific Southwest Research Station, Redwood Sciences Laboratory. Arcata, California.
- Aubry, K.B., K.S. McKelvey, and J.P. Copeland. 2007. Distribution and broadscale habitat relations of the wolverine in the contiguous United States. *Journal of Wildlife Management* 71(7):2147-2158.
- Banci, V. 1994. Wolverine. *In: The Scientific Basis for Conserving Forest Carnivores: American marten, fisher, lynx, and wolverine in the western United States.* USDA Forest Service, Rocky Mountain Forest and Range Experiment Station, General Technical Report RM-254.
- Barbour, M.G. and J. Major. 1977. *Terrestrial Vegetation of California.* Wiley Interscience. New York, NY.
- Barley, K.P., D.A. Farrell, and E.L. Greacen. 1965. The influence of soil strength on the penetration of a loam by plant roots. *Austral. Jour. Soil Res.* 3:69-79.
- Barrett, R.H., B.B. Boroski, J.G. Kie, and P.R. Krausman. 2004. The Rock Creek Recreation Area: A Response to Six Questions. Unpublished Report submitted to the Georgetown Ranger Station, Eldorado National Forest, July 2004.
- Beesley, D. 1996. Reconstructing the landscape: An environmental history, 1820-1960. Pp. 3-24 *In: Sierra Nevada Ecosystem Project: Final report to Congress, Vol. II, chap. 1.* Davis, Calif.: University of California, Center for Water and Wildland Resources.
- Beier, P. Drennan, J.E. 1997. Forest structure and prey abundance in foraging areas of northern goshawks. *Ecological applications.* 7(2): 564-571.
- Belcher, J.W. and S.D. Wilson. 1989. Leafy spurge and species composition of a mixed-grass prairie. *Journal of Range Management.* 42:172-175.
- Best, K.F., G.G. Bowes, A.G. Thomas, and M.G. Shaw. 1980. The biology of Canadian weeds. 39. *Euphorbia esula* L. *Canadian Journal of Plant Science.* 60:651-663.
- Billings, W.D. 1990. *Bromus tectorum*, a biotic cause of ecosystem impoverishment in the Great Basin. Pages 301-322 in G.M. Woodwell, editor. *The earth in transition: patterns and processes of biotic impoverishment.* Cambridge University Press, New York.

- Bissonette, J.A., D.J. Harrison, C.D. Hargis, T.G. Chapin. 1997. The influence of spatial scale and scale-sensitive properties on habitat selection by American marten. Pages 368-385. In: J.A. Bissonette. ed. Wildlife and landscape ecology: effects of pattern and scale. Springer-Verlag, New York, N.Y.
- Blakesley, J.A. 2003. Ecology of the California spotted owl: breeding dispersal and associations with forest stand characteristics in northeastern California. Dissertation, Colorado State University, Fort Collins, USA
- Boyce, D.A., and C.M. White. 1980. Peregrine falcon nesting habitat survey on U.S. Forest Service lands along the west slope of the Sierra Nevada Mountains. Submitted to the U.S. Forest Service, Eldorado National Forest, by the Wilderness Research Institute. Sebastopol, CA.
- Brand, L.A. and T.L. George. 2001. Response of passerine birds to forest edge in coast redwood forest fragments. *The Auk*. 118(3): 678-686.
- Brody, A.J., and M.R. Pelton. 1989. Effects of roads on black bear movements in western North Carolina. *Wildlife Society Bulletin* 17: 5-10.
- Buck, S. 1983. Habitat utilization by fisher (*Martes pennanti*) near Big Bar, CA. M.S. Thesis. Humboldt State Univ., Arcata, CA. 85 pages.
- Bull, E.L., C.G. Parks, and T.R. Torgersen. 1997. Trees and logs important to wildlife in the Interior Columbia River Basin. USDA Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-391.
- Buskirk, S.W. and L.F. Ruggiero. 1994. Marten. In: *The Scientific Basis for Conserving Forest Carnivores: American marten, fisher, lynx, and wolverine in the western United States*. USDA Forest Service, Rocky Mountain Forest and Range Experiment Station, General Technical Report RM-254.
- Buskirk, S.W. and W.J. Zielinski. 2003. Small and mid-sized carnivores. In: C.J. Zabel, and R.G. Anthony, editors. *Mammalian community dynamics: Management and conservation in coniferous forests of western North America*. Cambridge, UK: Cambridge University Press. Pg. 207-249.
- California Air Resources Board (CARB). 2007. The California Almanac of Emissions and Air Quality. California. Website: <http://www.arb.ca.gov/homepage.htm>
- California Department of Fish and Game (CDFG). 1979. Rubicon River Wild Trout Management Plan. State of California, The Resources Agency, Department of Fish and Game, Inland Fisheries Branch. Sacramento, California.
- CDFG. 1982. The Pacific Deer Herd Management Plan. California Department of Fish and Game in Cooperation with the Eldorado National Forest.
- CDFG 1988. A Guide to Wildlife Habitats of California; Edited by K.E. Mayer and W.F. Laudenslayer, Jr., State of California, Resources Agency, Department of Fish and Game. Sacramento, CA. 166 pp.
- CDFG. 1996. The status of rare, threatened and endangered animals and plants of California. California Department of Fish and Game, Sacramento, CA.
- CDFG. 1998. An assessment of mule and black-tailed deer habitats and populations in California. Report to the Fish and Game Commission.
- CDFG. 2001. Deer Hunting Final Environmental Document. California Department of Fish and Game. April 6, 2001.
- CDFG. 2003. Deer Hunting Draft Environmental Document, February 3, 2003. State of California, The Resources Agency, Department of Fish and Game. 269pp + appendices.

- CDFG. 2004. Bear Hunting Final Environmental Document. State of California, The Resources Agency, Department of Fish and Game. April 12, 2004.
- CDFG. 2007. Natural Diversity Data Base. 2007. Special Vascular Plants, Bryophytes, and Lichens List.
- CDFG. 2007. RAREFIND database. Electronic database managed by the Natural Diversity Data Base, Natural Heritage Division, California Department of Fish and Game. Sacramento, CA.
- CWHR 2005. California Department of Fish and Game. California Interagency Wildlife Task Group. 2005. California Wildlife Habitat Relationships version 8.1 personal computer program. Sacramento, California.
- California Department of Parks and Recreation. 2006. Estimating the state fuel tax paid on gasoline used in the off-highway operation of vehicles for recreation. Off-Highway Motor Vehicle Recreation Division.
- California Division of Mines and Geology (CDM). 1983. Technical Map of the Geothermal Resources of California. California Geological Data Map Series, Map No. 5. 1:750,000.
- California Farm Bureau Federation. 2007. County Farm Bureau Information. www.cfbf.com/counties/index.cfm Accessed January 30, 2007.
- California Native Plant Society (CNPS). 2001. Inventory of Rare and Endangered Plants of California (sixth edition). Rare Plant Scientific Advisory Committee, David P. Tibor, Convening Editor. California Native Plant Society. Sacramento, CA. x + 388 pp.
- California Native Plant Society (CNPS). 2007. Inventory of Rare and Endangered Plants of California (online version v7-07d 10-18-07). <http://cnps.web.aplus.net/cgi-bin/inv/inventory.cgi>.
- CalPIF (California Partners in Flight). 2002. Version 1.0. The draft coniferous forest bird conservation plan: a strategy for protecting and managing coniferous forest habitats and associated birds in California (J. Robinson and J. Alexander, lead authors). Point Reyes Bird Observatory, Stinson Beach, CA. <http://www.prbo.org/calpif/plans.html>.
- Cheng, S. (ed.). 2004. USDA Forest Service Research Natural Areas in California. USDA Forest Service, General Technical Report, PSW-GTR-188. Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture; 338 p.
- Chin, A., D.M. Rohrer, D.A. Marion, and J.A. Clingenpeel. 2004. Effects of All-terrain Vehicles on Stream Dynamics. *In*: Ouachita and Ozark Mountains Symposium: Ecosystem Management Research. Guldin, J.M. tech. comp. General Technical Report: SRS-74. USDA Forest Service, Southern Research Station. Asheville, North Carolina.
- Claar, J.J.; N. Anderson, D. Boyd. [et al.]. 1999 Carnivores. *In*: G. Joslin, H. Youmans, cords. Effects of recreation on Rocky Mountain Wildlife: a review for Montana. Helena, MT: Committee on Effects of Recreation on Wildlife, Montana Chapter of The Wildlife Society: 7.1-7.63.
- Clark, R.N., R.W. Koch, M.L. Hogans, H.H. Christensen, and J.C. Hendee. 1984. The Value of Roaded, Multiple-Use Areas as Recreation Sites in Three National Forests of the Pacific Northwest. United States Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station, Research Paper PNW-319.
- Climate Change. 2007. Synthesis Report – A Report of the Intergovernmental Panel of Climate Change Website: <http://www.ipcc.ch/ipccreports/as4-syr.htm>
- Cline, S.P., A.B. Berg, and H.M. Wight. 1980. Snag characteristics and dynamics in Doug-fir forests, western Oregon. *J. Wildl. Manage.* 44:773-786.

- Clinton, B.D. and J.M. Vose. 2003. Differences in Surface Water Quality Draining Four Road Surface Types in the Southern Appalachians. *Southern Journal of Applied Forestry*. 27:2:100-106.
- Coe, D.. 2006. Sediment production and delivery from forest roads in the in the Sierra Nevada, California. Master's Thesis. Department of Forest, Rangeland, and Watershed Stewardship, Colorado State University, Fort Collins, Colorado 80523.
- Cole, D.N. and N.G. Bayfield. 1993. Recreational trampling of vegetation: standard experimental procedures. *Biological Conservation* 63:209-215.
- Craig, D.L., P.N. Manley, T.C. Thayer, and P. O'Connell, P. In prep. Off-Highway Vehicle, Wildlife, and Plant Monitoring Plan for the Pacific Southwest Region. Review Draft July 2005.
- Crist, M., and C. Gehrke. 1995. Reconnecting the Landscape: A transportation management opportunity in the Boise National Forest, the Wilderness Society, 37 p.
- CVRWQCB (Central Valley Regional Water Quality Control Board). 2006. Internet Site containing the proposed 303(d) list for the central valley region of California as of October 25, 2006. http://www.waterboards.ca.gov/tmdl/docs/303dlists2006/final/r5_final303dlist.pdf.
- Damiani, C., D.C. Lee, and S.L. Jacobson. 2007. Effects of noise disturbance on northern spotted owl reproductive success. USDA Forest Service, Pacific Southwest Research Station, Report to the U.S Department of Agriculture and U.S. Department of Interior.
- Dark, S.J. 1997. A landscape-scale analysis of mammalian carnivore distribution and habitat use by fisher. M.S. Thesis. Humboldt State Univ. Arcata, CA. 67 p.
- Daw, S.K. and S. DeStefano. 2001. Forest characteristics of northern goshawk nest stands and post-fledging areas in Oregon. *Journal of wildlife Management*. 65(1): 59-65.
- Dean Runyan Associates. 2000. Campers in California, Travel Patterns and Economic Impacts; A Cooperative Project of the California Roundtable on Recreation, Parks, and Tourism and California Tourism. July 2000, 59 p.
- Delaney, D.K., T.G. Grubb, P. Beier, [et al.] 1999. Effects of helicopter noise on Mexican spotted owls. *Journal of Wildlife Management*. 63(1): 60-76.
- deVos, Jr. J.C., M.R. Conover, and N.E. Headrick. 2003. Mule Deer Conservation: Issues and Management Strategies. Berryman Institute Press, Utah State University, Logan.
- Dissmeyer, G.E, editor. 2000. Drinking Water from Forest and Grasslands: A Synthesis of the Scientific Literature. United States Department of Agriculture, Forest Service. General Technical Report SRS-39.
- Eldorado National Forest (ENF). 2003. Eldorado National Forest Forest Scale Roads Analysis ENF. 2004. Eldorado National Forest Sensitive Plant Field Guide. Eldorado National Forest. Placerville, CA.
- ENF. 2007. Eldorado National Forest Management Indicator Species Report. Unpublished report.
- ENF. 2007. Noxious Weed GIS database. Eldorado National Forest. Placerville, CA.
- ENF. 2007. Sensitive plant files, habitat and occurrence maps, and unpublished occurrence records dating from 1979 to 2007. Eldorado National Forest. Placerville, CA.
- El Dorado County. 2002. El Dorado County Air Pollution Control District Guide to Air Quality Assessment. El Dorado County. Placerville, California. Website: <http://www.co.el-dorado.ca.us/EMD/apcd>

- El Dorado County. 2005. Eldorado County 2005 Economic and Demographic Profile. El Dorado County. Placerville, California. Website: <http://www.co.el-dorado.ca.us/economic/2005profilepdf/Demographics.pdf>
- Elliott, G.V. Personal Communication. 2000. USDA Forest Service, Pacific Southwest Region, Eldorado National Forest. Placerville, California.
- Elliott, W.J., 2000. Roads and Other Corridors: Chapter 9. Drinking Water From Forests and Grasslands: A Synthesis of the Scientific Literature. G.E. Dissmeyer, Editor. General Technical Report SRS-39. USDA Forest Service, Southern Research Station. Asheville, North Carolina.
- Ellis, D.H. 1982. The peregrine falcon in Arizona: habitat utilization and management recommendations. Institute for Raptor Studies, Research Reports No. 1.
- Federal Register. 1996. 50 CFR Part 17. USDI Fish and Wildlife Service. Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for Four Plants and Threatened Status for One Plant from the Central Sierran Foothills of California Final Rule. Federal Register 61(203). <http://www.fws.gov/Endangered/pdfs/FR/f961018.pdf>.
- Fell, R., K.K.S. Ho, S. Lacasse, and E. Leroi. 2005. A framework for landslide risk assessment and management. *In*: O. Hungr, R. Fell, R. Couture, and E Eberhardt (eds.), *Landslide Risk Management, Proceedings of the International Conference on Landslide Risk Mangagement*, Vancouver, Canada, May 31 – June 3, pp. 3-26.
- FERC. 2003. Draft Environmental Impact Statement for Hydropower License, El Dorado Project No. 184-065. Federal Energy Regulatory Commission, Office of Energy Projects, Division of Environmental and Engineering Review. Washington, District of Columbia.
- Ferguson, L., C.L. Duncan, and K. Snodgrass. 2003. Backcountry road maintenance and weed management. Tech. Rep. 0371–2811–MTDC. Missoula, MT: U.S. Department of Agriculture, Forest Service, Missoula Technology and Development Center. 22 p.
- Findlay, S.C. and J. Bourdages. 2000. Response time of wetland biodiversity to road construction on adjacent lands. *Conservation Biology*, 14(1):86-94.
- Foppen, R. and R. Reijnen. 1994. The effects of traffic on breeding bird populations in woodland: II. Breeding dispersal of male willow warblers in relation to the proximity of a highway. *Journal of Applied Ecology*. 31:95-101.
- Freddy, D.J., W.M. Bronaugh, and M.C. Fowler. 1986. Responses of mule deer to disturbance by persons afoot and snowmobiles. *Wildlife Society Bulletin* 14(1):63-68.
- Frenkell, R.E. 1970. Ruderal vegetation along some California roadsides. University of California Press, Berkeley.
- Gaines, W.L., P.H. Singleton, and R.C. Ross. 2003. Assessing the Cumulative Effects of Linear Recreation Routes on Wildlife Habitats on the Okanogan and Wenatchee National Forests. USDA Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-586.
- Garcia and Associates. 2005. Crayfish Predation on Foothill Yellow-legged Frog (*Rana boylei*) Egg Masses in the Northern Sierra Nevada. Presentation at the Declining Amphibian Populations Task Force, California-Nevada Working Group Meeting, January 14, 2005. Berkeley, California.
- Gelbard, J.L., and J. Belnap. 2003. Roads as conduits for exotic plant invasions in a semiarid landscape. *Conservation Biology* 17(2):420–432.
- Gelbard, J.L., and S. Harrison. 2003. Roadless habitats as refuges for native grasslands: interaction with soil, aspect, and grazing. *Ecological Applications*. 13(2): 404–415.

- Gibbs, J.P. and W.G. Shriver. 2002. Estimating the Effects of Road Mortality on Turtle Populations. *Conservation Biology* 16 (6):1647-1652.
- Gillies, J.A., V. Etyemezian, H. Kuhns, D. Nikolic, D.A. Gillette. 2005. Effect of vehicle characteristics on unpaved road dust emissions, in *Atmospheric Environment*, Vol 39, pp 2341-2347.
- Graber, D.M. 1996. Status of terrestrial vertebrates. Pgs. 709 -726. Sierra Nevada Ecosystem Project, Final Report to Congress, vol. III, Assessments, Commissioned Reports and Background Information (Davis, University of California, Centers for Water and Wildland Resources, 1996).
- Green, G.; H.L. Bombay, and M.L. Morrison. 2003. Conservation Assessment of the Willow Flycatcher in the Sierra Nevada. USDA Forest Service, Pacific Southwest Region.
- Greenberg, C.H., S.H. Crownover, and D. R. Gordon. 1997. Roadside soil: a corridor for invasion of xeric scrub by nonindigenous plants. *Natural Areas Journal* 17:99-109.
- Grimes, D.W., R.J. Miller, V.H. Schweers, R.B. Smith, and P.L. Wiley. 1972. Soil strength modification of root development and soil water extraction: *Calif. Agri.* 26(11):12-14.
- Grinnell, J.; J.S. Dixon, M.M. Linsdale. 1937. Fur-bearing Mammals of California: their Natural History, Systematic Status, and Relations to Man. Volumes 1 & 2. University of California Press, Berkeley, CA, USA.
- Grubb, T.G. and R.M. King. 1991. Assessing human disturbance of breeding bald eagles with classification tree models. *Journal of Wildlife Management* 55: 500-511.
- Grubb, T.G.; L.L. Pater, and D.K. Delaney. 1998. Logging truck noise near nesting northern goshawks. Res. Note RMRS-RN-3. For Collins, CO: USDA Forest Service, Rocky Mountain Research Station. 2p.
- Gucinski, H., M.J. Furniss, R.R. Ziemer and M.H. Brooks. 2001. Forest roads: a synthesis of scientific literature. General Technical Report PNW-GTR-509. Portland, Oregon. USDA Forest Service, Pacific Northwest Research Station. 103 pages.
- Gutzwiller, K.J. 1995. Recreational disturbance and wildlife communities, p. 169 -181. *In*: R.L. Knight and K.J. Gutzwiller [eds.], *Wildlife and recreationists: coexistence through management and research*. Island Press, Washington, DC.
- Gutzwiller, K.J., H.A. Marcum, H.B. Harvey, J.D. Roth, and S.H. Anderson. 1998. Bird Tolerance to human intrusion in Wyoming montane forests. *The Condor* 100:519-527.
- Gutzwiller, K.J.; R.T. Wiedenmann, K.L. Clements, and S.H. Anderson. 1994. Effects of human intrusion on song occurrence and singing consistency in subalpine birds. *Auk*: Vol. 11(1).
- Hamann, B., H. Johnston, P. McClellan, [et al.]. 1999. Birds. *In*: G. Joslin and H. Youmans, eds. *Effects of recreation on Rocky Mountain wildlife: a review for Montana*. Helena, MT: Committee on Effects of Recreation on Wildlife, Montana Chapter of The Wildlife Society: 3.1-3.34.
- Hanski, I. 1989. Metapopulation Dynamics: Does it Help to Have More of the Same? *Trends in Ecology and Evolution* 4:113-115.
- Harbin, T. 2007. (Market zone analysis for RSFMP). USDA Forest Service, Independent Resources Enterprise Unit.
- Hargis, C.D., J.A. Bissonette, and D.L. Turner. 1999. The influence of forest fragmentation and landscape pattern on American martens. *J. Appl. Ecol.* 36:157-172.
- Hargis, C.D. and D.R. McCullough. 1984. Winter diet and habitat selection of marten in Yosemite National Park. *Journal of Wildlife Management*. 48: 140-146.

- Harr, R.D. and R.A. Nichols. 1993. Stabilizing Forest Roads to Help Restore Fish habitats: A Northwest Washington Example. *Fisheries* 18(4):18-22
- Harrison, R.T. 1975. Impact of Off-Road Vehicle Noise on a National Forest. USDA Forest Service San Dimas Equipment Development Center Project Record.
- Harrison, R.T. 1980. Predicting Impact of Noise on Recreationists. USDA Forest Service San Dimas Equipment Development Center Project Record. 8023 1202.
- Harrison, R.T., W.J. Makel, and L.M.B. Besse. 1993. Sound Levels of Five Motorcycles Traveling over Forest Trails: Rock Creek ORV Area. USDA Forest Service, Technology and Development Program Publication 9323 1802—SDTDC.
- Haskins, W. and D. Mayhood. 2007. Stream Crossing Density as a Predictor of Watershed Impacts. <http://gis.esri.com/library/userconf/proc97/proc97/to500/pap457/p457.htm>
- Hayward, G.D. and J. Verner, J. Tech. Editors. 1994. Flammulated, Boreal, and Great Gray Owls in the United States: A Technical Conservation Assessment. USDA Forest Service, General Technical Report RM-253.
- Hayward, L., and S. Wasser. 2008. Preliminary results on the effects of acute off-highway vehicle exposure on the Northern spotted owl *Strix occidentalis caurina*. Preliminary report to the USDA Forest Service, prepared by the University of Washington, Center for Conservation Biology.
- Hejl, S. 1994. Human induced changes in bird populations in coniferous forests in western America during the past 100 years. *Studies in Avian Biology* 15:232-246.
- Hickman, J.C., editor. 1993. The Jepson Manual: higher plants of California. University of California Press. Berkeley and Los Angeles, CA. 1400 pp.
- Holland, D. 1994. Western pond turtle: Habitat and history. DOE/BP Rept. #62137-1, Bonneville Power Admin., Portland, Oregon.
- Holst, E. 2001. Personal Observation, April 4, 2001. USDA Forest Service, Pacific Southwest Region, Eldorado National Forest. Placerville, California.
- Howard, T. 1998. Sierra Crossing, First roads to California. Berkeley and Los Angeles:
- Hurley, J.F., S.R. Robertson, S.R. Brougher, and A.M. Palmer. 1981. Wildlife Habitat Capability Models and Habitat Quality Criteria for the Western Sierra Nevada. USDA Forest Service, Stanislaus National Forest. Unpublished report.
- Hutto, R.L. 1995. Composition of bird communities following stand-replacement fires in northern Rocky Mountain conifer forests. *Conservation Biology* 9(5): 1041-1058.
- Hutto, R.L. 2006. Toward meaningful snag-management guidelines for postfire salvage logging in North American conifer forests. *Conservation Biology* 20(4): 984-993.
- Jennings, M.R. 1996. Status of Amphibians. Sierra Nevada Ecosystem Project: Final Report to Congress, vol. II, Assessments and Scientific Basis for Management Options. Centers for Water and Wildland Resources Report No. 37: 921-944. University of California. Davis. Davis, California.
- Jennings, M. R., and M.P. Hayes. 1994. Amphibian and reptile species of special concern in California. Report prepared for the California Department of Fish and Game, Inland Fisheries Division. Rancho Cordova, California.
- Jensen, P.K. 1995. Effect of light environment during soil disturbance on germination and emergence pattern of weeds. *Annals of Applied Biology*. 127:561–571.
- Johnson, B.K.; J.W. Kern, M.J. Wisdom, [et al.]. 2000. Resource selection and spatial separation of mule deer and elk during spring. *Journal of Wildlife Management*. 64(3): 685-697.

- Johnson, H.B., F.C. Vasek, and T. Yonkers. 1975. Productivity, diversity, and stability relationships in Mojave Desert roadside vegetation. *Bulletin of the Torrey Botanical Club* 102(3):106–115.
- Jonkel, C. 1978. Black, Brown, (Grizzly) and Polar Bears. *In: Big Game of North America, Ecology and Management*. The Wildlife Management Institute. Pages 227-248.
- Joslin, G., and H. Youmans, coordinators. 1999. Effects of recreation on Rocky Mountain wildlife: A review for Montana. Committee on Effects of Recreation on Wildlife, Montana Chapter of The Wildlife Society. 307 p.
- Kariel, H.G. 1990. Factors Affecting Response to Noise in Outdoor Recreational Environments. *The Canadian Geographer*, Vol. 34, No. 2, 142-149.
- Kasworm, W.F. and T.L. Manley. 1990. Road and trail influences on grizzly bears and black bears in northwest Montana. *International Conference on Bear Research and Management*, 8:79-84.
- Kattleman, R. 1996. Hydrology and Water Resources. *Sierra Nevada Ecosystem Project: Final Report to Congress, vol. II, Assessments and Scientific Basis for Management Options*. Centers for Water and Wildland Resources Report No. 37: 855-920. University of California, Davis. Davis, California.
- Kattelman, R. and M. Embury. 1996. Riparian Areas and Wetlands, *In: Sierra Nevada Ecosystem Project, Report to Congress, Vol. III, Chapt. 5*.
- Kattelman, R. and F. Shilling. 2004. Proceedings of the Sierra Nevada Science Symposium: Science for Management and Conservation. USDA Forest Service, Pacific Southwest Research Station. Albany, California.
- Keane, J.J. 1999. Ecology of the northern goshawk in the Sierra Nevada, California. Phd dissertation. University of California, Davis.
- Keller, M.E. and S.H. Anderson. 1992. Avian use of habitat configurations created by forest cutting in southeastern Wyoming. *Condor*. 94: 55-65.
- Knight, R.L., D.N. Cole. 1991. Effects of recreational activity on wildlife in wildlands. *Transactions of the North American Wildlife and Natural Resources Conference*. 56: 239-247.
- Knight, R.L. and K.J. Gutzwiller. 1995. *Wildlife and Recreationists: Coexistence through Management and Research*. Island Press, Washington. D.C. 372 pages.
- Koler, T.E. 1998. Evaluating slope stability in forest uplands with deterministic and probabilistic models: *Environmental and Engineering Geosciences* Vol. IV, No. 2, pp. 185-194.
- Koler, T.E. 2000. Landslide and roadway stability watershed analyses on industrial forestlands: *American Society of Civil Engineers Watershed Management 2000*, Colorado State University, Fort Collins.
- Koler, T.E. 2004. Business Decision-Making and Utility Economics of Large Landslides on National Forest Service System Lands in the United States: unpublished Ph.D. dissertation, Northcentral University, Prescott, AZ; UMI Dissertation No.: 3149881, 223 p.
- Koler, T.E. 2005. Business decision-making and utility economics of large landslides within national forest system lands in the United States. *In: O. Hungr, R. Fell, R. Couture, and E. Eberhardt, (eds.), Landslide Risk Management: Proceedings of the International Conference on Landslide Risk Management, Vancouver, Canada, 31 May – 3 June, 2005*, University of British Columbia, pp. 391- 400.
- Koler, T.E. 2006. Progress in forest engineering geology in the late 20th century and early 21st century-- the integration of engineering geology within ecosystem management of forested

- lands: Association of Engineering Geologists Shlemon Specialty Conference Keynote Address, Mass Wasting in Disturbed Watersheds, Durango, CO May 3.
- Koler, T.E., J.B. Loomis, and J.C. Bergstrom. 2007. First steps in estimating the total economic value for landslide hazard mitigation on national forest system lands. *In: First North American Landslide Risk Conference*, Vail, CO June 3 – 8, pp. 1215-1224.
- Kondolf, G.M., R. Kattelman, M. Embury, and D.C. Erman. 1996. Status of Riparian Habitat. Sierra Nevada Ecosystem Project: Final Report to Congress, vol. II, Assessments and Scientific Basis for Management Options. Centers for Water and Wildland Resources Report No. 37: 1009-1030. University of California, Davis. Davis, California.
- Krebs, J., E.C. Lofroth and I. Parfitt. 2007. Multiscale habitat use by wolverines in British Columbia, Canada. *J. of Wildlife Management* 71(7):2180-2192.
- Livezey, K.B. 1991. Home range, habitat use, disturbance and mortality of Columbian black-tailed deer in Mendocino National Forest. *California Fish and Game* 77:201-209.
- Longhurst, W.M., A.S. Leopold, and R.F. Dasmann. 1952. A Survey of California Deer Herds Their Ranges and Management Problems. Game Bulletin No. 6, California Department of Fish and Game by Museum of Vertebrate Zoology, University of California, Berkeley, CA.
- Lonsdale, W.M. and A.M. Lane. 1994. Tourist vehicles as vectors of weed seeds in Kakadu National Park, northern Australia. *Biological Conservation*. 69: 277–283.
- Lowry, F.E., H.M. Taylor, and M.G. Huck. 1970. Growth rate and yield of cotton as influenced by depth and bulk density of soil pans: *Soil Sci. Soc. America Proc.*, 34(2):306-309.
- MacDonald, L.H., D. Cole, and S. Litschert. 2002. Assessing cumulative watershed effects in the central Sierra Nevada: hillslope measurements and catchment-scale modeling. General Technical Report PSW-GTR-193. USDA Forest Service.
- MacDonald, L.H., D. Cole, and S. Litschert. 2004. Assessing cumulative watershed effects in the central Sierra Nevada: hillslope measurements and catchment scale modeling. Dept of Forest, Range, and Watershed Stewardship, Colorado State University. Fort Collins Co 80523
- MacDonald, L.H. and J.D. Stednick. 2003. Forests and water: a state-of-the-art review for Colorado. Colorado State University. CWRRI completion report no. 196.
- Mack, R.N. 1989. Temperate grasslands vulnerable to plant invasions: characteristics and consequences. Pages 155–179 in J.A. Drake, H.A. Mooney, F. Di Castri, R.H. Groves, F.J. Kruger, M. Rejmanek, and M. Williamson, editors. *Biological invasions: a global perspective*. Wiley, Chichester, United Kingdom.
- Madej 1998. Erosion and sediment delivery following removal of forest roads. U.S. Geological Survey, Western Ecological Research Center, 1655 Heindon Road, Arcata, CA 95521. mary_ann_madej@usgs.gov
- Maholland, B. 2002. Geomorphic Assessment of Natural and Anthropogenic Sediment Sources in an Eastern Sierra Nevada Watershed. Master's Thesis. University of Nevada, Reno. Reno, Nevada.
- Maholland, B. and T.F. Bullard. 2005. Sediment-related road effects on stream channel networks in an Eastern Sierra Nevada watershed. Nevada Water Resources Association. Volume 2, number 2. becky.maholland@foothill.com
- Maholland, B. and T.B. Bullard. 2005. Sediment-Related Road Effects on Stream Channel Networks in an Eastern Sierra Nevada Watershed. *In: Journal of the Nevada Water Resources Association*, Fall 2005, Vol. 2, No. 2
- Manley, P.N., Ph.D. Personal communication March 7, 2005. USDA Forest Service, Pacific Southwest Region, Eldorado National Forest. Placerville, California.

- Markman, S. 2003. Soil and Hydrologic Assessment of the Gold Note OHV Trail System, unpublished. Eldorado National Forest, 100 Forni Road, Placerville, California. 17 pages. sgmarkman@fs.fed.us
- Markman, S. 2007. Hydrologic Assessment for the Alder Fuels Reduction Project, unpublished. Eldorado National Forest, 100 Forni Road, Placerville, California. 60 pages. sgmarkman@fs.fed.us
- Markman, S. 2007. Hydrologic Assessment for the Marshall Mine Fuels Reduction Project, unpublished. Eldorado National Forest, 100 Forni Road, Placerville, California. 50 pages. sgmarkman@fs.fed.us
- Markman, S, personal communication. 2007. Statements are based on 16 years of field observations by Steve Markman, Hydrologist for the U.S. Forest Service and Bureau of Land Management over the past 18 years. sgmarkman@fs.fed.us
- Markman, S. 2008. Hydrologic Analysis: Public Motor Vehicle Route Designation Final Environmental Impact Statement. USDA Forest Service, Pacific Southwest Region, Eldorado National Forest. Placerville, California.
- Marra, P., and R.L. Holberton. 1998. Corticosterone levels as indicators of habitat quality: effects of habitat segregation in a migratory bird during the non-breeding season. *Oecologia* 116:284-292.
- May, R., A. Landa, J. van Dijk, J.D.C. Linnell, and R. Andersen. 2006. Impact of infrastructure on habitat selection of wolverines *Gulo gulo*. *Wildlife Biology* 12:285-295.
- McCashion, J.D. and R.M. Rice. 1983. Erosion on Logging Roads in Northwestern California: How Much is Avoidable? *Journal of Forestry* 81(1):23-26
- Meahan, W.R., editor. 1991. Influences of forest rangeland management on salmonid fishes and their habitats. American Fisheries Society Special Publication 19. Bethesda, Maryland. ISBN 0-913-235-68-7/
- Menke, J.W., C. Davis, and P. Beesley. 1996. Rangeland Assessment. *In*: Sierra Nevada Ecosystem Project, Final Report to Congress, vol. III. University of California, Davis, Centers for Water and Wildland Resources. P. 901-972.
- Miller, S.G., R.L. Knight, K.C. Miller. 1998. Influence of recreational trails on breeding bird communities. *Ecological Applications*. N 8:162-169.
- Mitchell, C.R. and K.J. Silverman. 1986. Soil Survey, Eldorado National Forest, California. USDA-Forest Service in cooperation with California Department of Forestry and University of California Agricultural Experiment Station. 217 p. plus tables and maps.
- Mosbacher, F. Personal communication. January 17, 2007. USDA Forest Service, Pacific Southwest Region, Eldorado National Forest. Placerville, California.
- Moyle, P.B. 1996. Potential Aquatic Diversity Management Areas. Sierra Nevada Ecosystem Project: Final Report to Congress, vol. II, Assessments and Scientific Basis for Management Options. Centers for Water and Wildland Resources Report No. 37: 363-407. University of California. Davis. Davis, California.
- Moyle, P.B. 2002. Inland Fishes of California. University of California Press. Berkeley, California.
- NatureServe. 2006. NatureServe Explorer: An online encyclopedia of life [web application]. NatureServe, Arlington, Virginia. Available <http://www.natureserve.org/explorer>
- North, M., G.N. Steger, R. Denton, G. Eberlein, T. Munton, and K. Johnson. 2000. Association of weather and nest-site structure with reproductive success in California spotted owls. *Journal of Wildlife Management* 64:797-807.

- O’Laughlin, J. and G.H.Belt. 1995. Functional Approaches to Riparian Buffer Strip Design. *Journal of Forestry*. February 1995.
- Orr, R.T. 1954. Natural History of the Pallid Bat, *Antrozous pallidus*. *Proceedings of the California Academy of Sciences*, 28(4):165-246.
- Padget, P.E., D. Meadows, E. Eubanks, and W.E. Ryan. 2007. Monitoring fugitive dust emissions from off-highway vehicles traveling on unpaved roads and trails using passive samplers, in *Environmental Monitoring Assessment*, Springer Science, 11p.
- Parendes, L.A., and J.A. Jones. 2000. Role of light availability and dispersal in exotic plant invasion along roads and streams in the H. J. Andrews Experimental Forest, Oregon. *Conservation Biology* 14(1):64-75.
- Parson, D.W., R.W. Prellwitz, T.E. Koler, and J.C. Cloyd. 2007. Scale problems in landslide risk management – an update on US Forest Service Three Level System. *In: First North American Landslide Risk Conference*, Vail, CO June 3 – 8, pp. 149-161.
- Paton, P.W.C. 1994. The effect of edge on avian nest success: how strong is the evidence? *Conservation Biology*. 8:17-26.
- Perry, C. and R. Overly. 1977. Impact of roads on big game distribution in portions of the Blue Mountains of Washington, 1972 -1973. Bull. 11. Olympia, WA: Washington Department of Game Applied Research Section. 39 p.
- Podsiadlo, C. 2006. History of Grazing Allotments within the range of the Pacific Deer Herd. Unpublished Reports. Eldorado National Forest, Placerville, CA.
- Poff, R.J. 2004. Revised OHV Trail Monitoring Form (G-Y-R Form) and Training Guide, Prepared for USDA Forest Service, Pacific Southwest Region, July 30, 2004. 33 p.
- Potter D.A. 1998. Forested Communities of the Upper Montane in the Central and Southern Sierra Nevada. General Technical Report PSW-GTR-169. USDA Forest Service, Pacific Southwest Research Station.
- Potvin, F., L. Belanger, and K. Lowell. 2000.

- Stynes, D.J., and E.M. White. 2005. Spending profiles of National Forest visitors. NVUM Four Year Report.
- Supernowicz, D. n.d. Baseline Study For Silver Lake, Caples Lake, And Lake Aloha Located Within The Eldorado National Forest - Historic Context. Manuscript on file at the Eldorado National Forest Supervisors Office, Placerville.
- Supernowicz, D. 1991. California Archaeological resource Identification and Data Acquisition Program: Historic Trails and Roads. Report on file at the Eldorado National Forest Supervisors Office, Placerville.
- Swarthout, E.C.H., and R.J. Steidl. 2001. Flush responses of Mexican spotted owls to recreationists. *Journal of Wildlife Management*, 65(2): 312-317.
- Switalski, T.A., et al. 2004. Benefits and impacts of road removal. *The Ecological Society of America*. www.frontiersinecology.org
- Taylor, H.M. 1971. Effects of soil strength on seedlings emergence, root growth, and crop yield, in *Compaction of agricultural soils: Am. Soc. Agr. Eng. Monograph*, p. 292-305.
- Taylor H.M. and R.R. Bruce. 1968. Effects of soil strength on root growth and crop yield in the southern United States: 9th Int. Congr. Soil Sci., Trans. I, p. 803-811.
- Taylor, H.M. and E. Burnett. 1964. Influence of soil strength on the root-growth habits of plants. *Soil Sci.* 98:174-180.
- Taylor, H.M. and H.R. Gardner. 1963. Penetration of cotton seedling taproots as influenced by bulk density, moisture content, and strength of soil. *Soil Sci.* 96:153-156.
- Taylor, H.M. and L.F. Ratliff. 1969. Root elongation rates of cotton and peanuts as a function of soil strength and soil water content. *Soil Sci.* 108:113-119.
- Thomas, J, Editor. 1979. *Wildlife Habitats in Managed Forests in the Blue Mountains of Oregon and Washington*. USDA FS Forest Service Agricultural Handbook 553
- Tierney, P., E. Rosegard, and J. Absher. 2002. Central and Northern California outdoor recreation market analysis. USDA Forest Service Pacific Southwest Research Station Technical Report.
- Tonnessen, K.A. 2000. Protecting Wilderness Air Quality in the United States, in *Wilderness science in a time of change conference*, USDA Forest Service Proceedings RMRS-P-15-Vol 5, pp 74-96.
- Trombulak, S.C. and C.A. Frissell. 2000. Review of Ecological Effects of Roads on Terrestrial and Aquatic Communities. *Conservation Biology*. 14(1):18-30
- Tyser, R.W. and C.A. Worley. 1992. Alien flora in grasslands adjacent to road and trail corridors in Glacier National Park, Montana, (USA). *Conservation Biology* 6(2):253-262.
- United States Department of Agriculture (USDA). 1996. Managing roads for wet meadow ecosystem recovery. FHWA-FLP-96-016.
- USDA Forest Service (USDA FS). 1989. Eldorado National Forest Land and Resource Management Plan. Placerville, CA.
- USDA FS. 1990. Threatened and Endangered Plants Program Handbook (R-5 FSH 2609.25) Amendment 1, Exhibit 1: R-5 Sensitive Plant Species.
- USDA FS. 1991. Letter from Washington Office regarding appeals of the ENF LRMP. Signed by David Unger, reviewing officer for the Chief.
- USDA FS. 1995. Forest Service Manual: Title 2600 - Wildlife, Fish, and Sensitive Plant Habitat Management (section 2670), WO Amendment 2600-95-7. Effective 6/23/95.
- USDA FS. 1995. Forest Service Manual: Noxious Weed Management (section 2080). Effective 11/29/95.

- USDA FS. 1997. Rock Creek recreation trails: Revised draft environmental impact statement. Eldorado National Forest, Pacific Southwest Region.
- USDA FS. 1998. Stemming the Invasive Tide: Forest Service Strategy for Noxious and Nonnative Plant Management.
- USDA FS. 1998. Forest Service Roads: A Synthesis of Scientific Information.
- USDA FS 1998b. Sierra Nevada Science Review, Report of the Science Review Team charged to synthesize new information of rangewide urgency to the national forests of the Sierra Nevada. USDA Forest Service, Pacific Southwest Research Station.
- USDA FS. 1999. Roads Analysis: informing decisions about managing the national forest transportation system. Miscellaneous Report FS-643. Washington, DC: 222 p
- USDA FS, 2000. Forest Service Roadless Area Conservation Final Environmental Impact Statement, Vol. 1; November 2000, 663 p)
- USDA FS. 2001. Noxious Weed Management Strategy. Pacific Southwest Region.
- USDA FS. 2001. Sierra Nevada Forest Plan Amendment Final Environmental Impact Statement, Vol. 3. USDA Forest Service, Pacific Southwest Region. Vallejo, California.
- USDA FS. 2001a. Sierra Nevada Forest Plan Amendment, Final Environmental Impact Statement, Record of Decision. Pacific Southwest Region.
- USDA FS. 2003-2007. Transaction Registers (CMRD, CMTL)
- USDA FS. January 2004. Sierra Nevada Forest Plan Amendment, Final Environmental Impact Statement, Record of Decision.
- USDA FS. 2004. Prepared by S.M. Kocis, D.B.K. English, S.J. Zarnoch, R. Arnold, L. Warren, and C. Ruka. National Visitor Use Monitoring Results, Eldorado National Forest. Pacific Southwest Region.
- USDA FS 2004. Record of Decision, Supplemental Environmental Impact Statement for the Sierra Nevada Forest Plan Amendment. USDA Forest Service, Pacific Southwest Region.
- USDA Forest Service. 2004b. Sierra Nevada Forest Plan Amendment Final Supplemental Environmental Impact Statement. USDA Forest Service, Pacific Southwest Region. Vallejo, California.
- USDA Forest Service. 2004c. Proceedings of the Sierra Nevada Science Symposium: Science for Management and Conservation. USDA Forest Service, Pacific Southwest Research Station. Albany, California.
- USDA FS. 2005. Ocala National Forest Transportation Management Final Environmental Impact Statement, Southeastern Region.
- USDA FS. 2005. Guidelines for Engineering Analysis of Motorized Mixed Use on National Forest System Roads. (EM-7700-30).
- USDA FS. December 2005. Guidelines for Road Maintenance Levels. T&D Program.
- USDA Forest Service. 2006. Final Rock Creek Recreational Trails Supplemental Environmental Impact Statement. Eldorado National Forest, Pacific Southwest Region, USDA Forest Service.
- USDA FS. 2006. Regional Forester's List of Sensitive Plant Species (Revision). July 31. Pacific Southwest Region.
- USDA Forest Service. 2006a. Route Designation: Project Design Criteria for “No effect” or “May Affect Not Likely to Adversely Affect” determination for TE Species – October 2006 version 1.
- USDA FS. 2006a Programmatic Agreement among the USDA Forest Service, Pacific Southwest Region, USDA Forest Service, Intermountain Region’s Humboldt-Toiyabe National Forest,

- California State Historic Preservation Officer, and Advisory Council on Historic Preservation Regarding the Process for Compliance with Section 106 of the National Historic Preservation Act for Designating Motor Vehicle Routes and Managing Motorized Recreation on the National Forests in California. Pacific Southwest Region.
- USDA Forest Service, 2007. Eldorado National Forest Management Indicator Species Report: Bald Eagle.
- USDA Forest Service. 2007. El Dorado National Forest MIS Species Account. Unpublished. USDA Forest Service, Pacific Southwest Region, Eldorado National Forest. Placerville, California.
- U.S. Department of Finance. Census Bureau. 2000, 2005 Census data.
- USDI Bureau of Land Management (BLM). 1999. Lowden Ranch Prescribed Fire Review. Final Report. July 22. USDI Bureau of Land Management.
- USDI Fish and Wildlife Service. 1982. Pacific Coast American peregrine falcon recovery plan. U. S. Fish and Wildlife Service and the Pacific Coast American Peregrine Falcon Recovery Team.
- USDI Fish and Wildlife Service. 2000. Endangered and Threatened Wildlife and Plants: 90 Day Finding on a Petition to List the Mountain Yellow-legged Frog as Endangered. Federal Register 65(198):60603-60605.
- USDI Fish and Wildlife Service. 2004. 12-month Finding for a Petition to List the West Coast Distinct Population Segment of the Fisher (*Martes pennanti*) as Threatened or Endangered. Federal Register, Vol. 69, No. 68, April 8, 2004.
- USDI Fish and Wildlife Service. 2006a. 12-month Finding for a Petition to List the California spotted owl (*Strix occidentalis occidentalis*) as Threatened or Endangered. Federal Register, Vol. 71, No. 100, May 24, 2006.
- USDI Fish and Wildlife Service. 2006a. Endangered and Threatened Wildlife and Plants: Proposed Critical Habitat Designations; Designation of Critical Habitat for the California Red-Legged Frog, and Special Rule Exemption Associated With Final Listing for Existing Routine Ranching Activities. Federal Register 71(71): 19244-19292.
- USDI Fish and Wildlife Service. 2006b. Endangered and Threatened Wildlife and Plants: Proposed Critical Habitat Designations; Proposed Rule. Federal Register 71(176): 53785-53786.
- USDI Fish and Wildlife Service. 2006b. Estimating the Effects of Auditory and Visual Disturbance to Northern spotted Owls and Marbled Murrelets in Northwestern California. Guidance provided by the Arcata Fish and Wildlife Office, July 31, 2006.
- USDI Fish and Wildlife Service. 2007. National Bald Eagle Management Guidelines. May 2007. 23 pp.
- USDI National Park Service. 2005. Rivers, Trails, and Conservation Assistance Program, Rivers and Trails, California Segments, N-Z. Website: <http://www.nps.gov/ncrc/programs/rtca/nri/states/ca2.html> accessed March 15, 2005. USDI National Park Service, National Center for Recreation and Conservation, Rivers, Trails, and Conservation Assistance Program. Oakland, California.
- U.S. Environmental Protection Agency (2002). Interim Review of the Particulate Matter (PM) Research Centers of the USEPA: An EPA Science Advisory Board Report. Washington, DC: U.S. EPA, Science Advisory Board. EPA-SAB-EC-02-008, May 2002.
- Van Dyke, F.G., R.H. Brooke, H.G. Shaw, B.B. Ackerman, T.P. Hemker, and F.G. Lindzey. 1986. Reactions of mountain lions to logging and human activity. J. of Wildlife Management 50: 95-102.

- Veihmeyer, F.J. and A.H. Hendrickson. 1948. Soil density and root penetration: *Soil Sci.* 65:487-493.
- Verner, J. 1994. Current Management Situation: Great Gray Owls. *In: Flammulated, Boreal, and Great Gray Owls in the United States: A Technical Conservation Assessment.* USDA Forest Service, Rocky Mountain Research Station, General Technical Report RM-253, pg. 155-213.
- Verner, J., K.S. McKelvey, B.R. Noon, R.J. Gutiérrez, G.I. Gould, Jr., T.W. Beck, Technical Coordinators. 1992. The California spotted owl: a technical assessment of its current status. General Technical Report PSW-GTR-133 Albany CA: Pacific Southwest Research Station, Forest Service, US Department of Agriculture; 285 p.
- Voorhees, W.B., D.A. Farrell, and W.E. Larson. 1975. Soil strength and aeration effects on root elongation. *Soil Sci. Soc. America Proceedings.* 39:948-953.
- Walker, J.L. 2006. Heritage Resource Report for 2006 OHV Route Designation R2006-05-03-00001. On file at the Eldorado National Forest Supervisors Office, Placerville.
- Wasser, S.K., K. Bevis, G. King, and E. Hanson. 1997. Noninvasive physiological measures of disturbance in the northern spotted owl. *Conservation Biology* 4:1019-1022.
- Webb, R.H., H.C. Ragland, W.H. Godwin, and D. Jenkins. 1978. Environmental effects of soil property changes with off-road vehicle use. *Environmental Management* 2:219-233.
- Widell, D.L. 2002. Taking the High Road: The Future of California's Off-Highway Recreation Program. California State Parks, OHMVR Division. 97 p.
- Wilshire, H.G., G.B. Bodman, D. Broberg, W.J. Kockelman, J. Major, H.E. Malde, C.T. Snyder, and R.C. Stebbins. 1977. Impacts and management of off-road vehicles. The Geological Society of America. Report of the Committee on Environment and Public Policy.
- Wilshire, H.G., J.K. Nakata, S. Shipley, and K. Prestegard. 1978. Impacts of vehicles on natural terrain at seven sites in the San Francisco Bay Area. *Environmental Geology* 2(5):295-319.
- Wisdom, M.J., and L.J. Bate. 2008 (*in press*) Snag density varies with intensity of timber harvest and human access. *Forest Ecology and Management*, doi:10.1016/j.foreco.2007.12.027.
- Wisdom, M.J. et al. 2005. The Starkey Project: a synthesis of long-term studies of elk and mule deer. (Wisdom, M.J. tech. ed) Reprinted from the 2004 Transactions of the North American Wildlife and Natural Resources Conference, Lawrence, KS. Effects of off-road vehicles on mule deer and elk.
- Wisdom, M.J., Holthausen, R.S., Wales, B.C. [et al.]. 2000 Source habitats for terrestrial vertebrates of focus in the interior Columbia basin: broad-scale trends and management implications. Gen. Tech. Rep. PNW-GTR-485. USDA Forest Service/ 529 p.
- Witmer, G.W., M. Wisdom, E.P. Harshman, R.J. Anderson, [et al.] 1985. Deer and elk. *In: E.R. Brown, editor. Management of wildlife and fish habitats in forests of western Oregon and Washington.* USDA Forest Service Publication No. R6- F&WL-192-1985.
- Wu, T.H., W.H. Tang, and H.H. Einstein. 1996 Landslide hazard and risk assessment. *In: Turner, A.K., and Schuster, R.L., (eds.), Landslides Investigation and Mitigation: National Research Council Transportation Research Board Special Report 247, Washington D.C., pp. 106-120.*
- Zabel, C.J., K.S. McKelvey, and J.D. Johnston. 1992. Patterns of habitat use by California spotted owls in logged forests of the northern Sierra Nevada. *In: The California Spotted Owl: A Technical Assessment of Its Current Status.* USDA Forest Service, Pacific Southwest Research Station, General Technical Report PSW-GTR-133.

- Zande, A.N.; J.C. Berkhuizedn, H.C. van Latersteijn, W.J. ter Keurs, and A.J. Poppelaars. 1984. Impact of outdoor recreation on the density of a number of breeding bird species in woods adjacent to urban residential areas. *Biological Conservation* 30: 1-39.
- Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer and M. White. 1990. California's wildlife: Vol III: Mammals. Calif. Dept. of Fish and Game, Sacramento, CA. 407 pp.
- Zeiner, D. C., W.F. Laudenslayer Jr., K.E. Mayer, and M. White, editors. 1988. California's Wildlife. Vol I. Amphibians and Reptiles. California Statewide Wildlife Habitat Relationships System. Department of Fish and Game, The Resources Agency. Sacramento, California.
- Zielinski, W.J., R.L. Truex, F.V. Schlexer, L.A. Campbell, and C. Carroll. 2005 Historical and contemporary distributions of carnivores in forests of the Sierra Nevada, California, USA. *Journal of Biogeography* 32:1385-1407.
- Ziemer, Robert, R. 1981. Storm flow response to road building and partial cutting in small streams of northern California. *Water Resources Research*.17(4):907-917.

Glossary

Terminology

The Forest Service uses the term “NFS road” and “NFS trail” (also referred to as NFS routes when combined) to refer to any road or trail that is listed on the forest transportation atlas other than a road or trail which has been authorized by a legally documented right-of-way held by a State, county, or other local public road authority. The NFS routes range from trails to arterial and collector roads, which may be paved or surfaced, to local roads that may be either improved or unimproved. The lower-level, unimproved roads are not actively maintained, but are primarily kept open by timber sale road reconstruction and vehicle use.

In addition to NFS routes on the transportation system, a number of other types of routes currently exist on the Forest. Some originated as temporary logging roads, skid trails, or firelines, which were never rehabilitated, and, over time, have remained open to use by the public, even though they are not maintained. Forest users created other roads and trails by driving cross-country through the Forest. These routes are not part of the forest transportation atlas, and, are therefore, referred to as “unauthorized routes.”

Definitions

All-terrain vehicle (ATV): A type of off-highway vehicle that travels on three or more low-pressure tires; has handle-bar steering; is less than or equal to 50 inches in width; and has a seat designed to be straddled by the operator.

Area: A discrete, specifically delineated space that is smaller, and in most cases much smaller, than a Ranger District (36 CFR 212.1).

Arterial road: An NFS road that provides service to large land areas and usually connects with other arterial roads or public highways.

Collector road: An NFS road that services smaller areas than an arterial road and that usually connects arterial roads to local roads or terminal facilities.

Designated road, trail, or area: A NFS road, NFS trail, or an area on NFS lands that is designated for motor vehicle use pursuant to 36 CFR part 212.51 on a motor vehicle use map (36 CFR 212.1).

Forest road or trail: A road or trail wholly or partially within or adjacent to and serving the NFS that the Forest Service determines is necessary for the protection, administration, and utilization of the NFS and the use and development of its resources (36 CFR 212.1).

Forest transportation atlas: A display of the system of roads, trails, and airfields of an administrative unit (36 CFR 212.1).

Forest transportation facility: A forest road or trail or an airfield that is displayed in a forest transportation atlas, including bridges, culverts, parking lots, marine access facilities, safety devices, and other improvements appurtenant to the forest transportation system (36 CFR 212.1).

Forest transportation system: The system of NFS roads, trails, and airfields on NFS lands (36 CFR 212.1).

Green-sticker Vehicle: A motor vehicle built since 2003 which is in compliance with the 1998 California Air Resources Board off-highway vehicle exhaust emission standards and registered pursuant to California Vehicle Code Book Division 16.5, Section 38160, in addition to those built prior to 2003 and also registered pursuant to California Vehicle Code Book Division 16.5,

Section 38160. Currently, the registration identification for these vehicles in the State of California comes in the form of a green sticker. These vehicles may include: motorcycles, motor driven cycles, sand buggies, dune buggies, all-terrain vehicles (ATV), or any motor vehicle commonly referred to as a jeep or four-wheel drive (4WD).

Highway-licensed vehicle (highway legal vehicle): Any motor vehicle that is licensed or certified under State law for general operation on all public roads within the State. Operators of highway legal vehicles are subject to State traffic law, including requirements for operator licensing.

Local road: A NFS road that connects a terminal facility with collector roads, arterial roads, or public highways and that usually serves a single purpose involving intermittent use.

Maintenance level (ML): Defined in FSH 7709.58, 10, 12. 3 as the level of service provided by, and maintenance required for, a specific road. Maintenance levels must be consistent with road management objectives, and maintenance criteria. Roads may be maintained at one level and planned to be maintained at a different level at some future date. The operational maintenance level is the maintenance level currently assigned to a road considering today's needs, road condition, budget constraints, and environmental concerns; in other words, it defines the standard to which the road is currently being maintained. The objective maintenance level is the maintenance level to be assigned at a future date considering future road management objectives, traffic needs, budget constraints, and environmental concerns.

Maintenance level 1 road: Defined in FSH 7709.58, 10, 12. 3 as intermittent service roads during the time they are closed to vehicular traffic. The closure period must exceed 1 year. Basic custodial maintenance is performed to keep damage to adjacent resources to an acceptable level and to perpetuate the road to facilitate future management activities. Emphasis is normally given to maintaining drainage facilities and runoff patterns. Planned road deterioration may occur at this level. Appropriate traffic management strategies are "prohibit" and "eliminate." Roads receiving level 1 maintenance may be of any type, class, or construction standard, and may be managed at any other maintenance level during the time they are open for traffic. However, while being maintained at level 1, they are closed to vehicular traffic, but may be open and suitable for non-motorized uses. These roads have the following attributes: (1) vehicular traffic is eliminated, including administrative traffic; (2) physically blocked or entrance is disguised; (3) not subject to the requirements of the Highway Safety Act; (4) maintenance is done only to minimize resource impacts; and (5) no maintenance other than a condition survey may be required so as long as no potential exists for resource damage.

Maintenance level 2 road: Defined in FSH 7709.58, 10, 12.3 as roads open for use by high-clearance vehicles. Passenger car traffic is not a consideration. Traffic is normally minor, usually consisting of one or a combination of administrative, permitted, dispersed recreation, or other specialized uses. Log haul may occur at this level. Appropriate traffic management strategies are either (1) discourage or prohibit passenger cars or (2) accept or discourage high-clearance vehicles. These roads have the following attributes: (1) low traffic volume and low speed; (2) typically local roads; (3) typically connect collectors and other local roads; (4) dips are the preferred drainage treatment; (5) not subject to the requirements of the Highway Safety Act; (6) surface smoothness is not a consideration; and (7) not suitable for passenger cars.

Maintenance level 3 road: Defined in FSH 7709.58, 10, 12.3 as roads open and maintained for travel by prudent drivers in a standard passenger car. User comfort and convenience are low priorities. Roads in this maintenance level are typically low speed, single lane with turnouts, and spot surfacing. Some roads may be fully surfaced with either native or processed material. Appropriate traffic management strategies are either "encourage" or "accept." "Discourage" or "prohibit" strategies may be employed for certain classes of vehicles or users. These roads have

the following attributes: (1) subject to the requirements of the Highway Safety Act and Manual of Uniform Traffic Control Devices (MUTCD); (2) roads have low- to moderate-traffic volume; (3) typically connect arterial and collector roads; (4) a combination of dips and culverts provide drainage; (5) may include some dispersed recreation roads; and (6) potholing or washboarding may occur.

Maintenance level 4 road: Defined in FSH 7709.58, 10, 12.3 as roads that provide a moderate degree of user comfort and convenience at moderate travel speeds. Most roads are double lane and aggregate surfaced. However, some roads may be single lane. Some roads may be paved and/or dust abated. The most appropriate traffic management strategy is “encourage.” However, the “prohibit” strategy may apply to specific classes of vehicles or users at certain times. These roads have the following attributes: (1) subject to requirements of the Highway Safety Act and MUTCD; (2) roads have moderate traffic volume and speeds; (3) may connect to county roads; (4) culverts provide drainage; (5) usually a collector; and (6) may include some developed recreation roads.

Maintenance level 5 road: Defined in FSH 7709.58, 10, 12.3 as roads that provide a high degree of user comfort and convenience. These roads are normally double-lane, paved facilities. Some may be aggregate surfaced and dust abated. The appropriate traffic management strategy is “encourage.” These roads have the following attributes: (1) subject to the requirements of the Highway Safety Act and MUTCD; (2) highest traffic volume and speeds; (3) typically connect State and county roads; (4) culverts provide drainage; (5) usually arterial and collector; (6) may include some developed recreation roads; and (7) usually paved or chip-sealed.

Mixed use road: Segments of NFS roads that are identified and signed as open to state licensed and unlicensed vehicles; generally more than 50 inches in width and usually, but not always, low maintenance roads with no high-speed traffic.

Motor vehicle: Any vehicle which is self-propelled, other than: (1) A vehicle operated on rails; and (2) Any wheelchair or mobility device that is designed solely for use by a mobility-impaired person for locomotion, and that is suitable for use in an indoor pedestrian area (36 CFR 212.1).

Motor vehicle use map: A map reflecting designated roads, trails, and areas on an administrative unit or a Ranger District of the NFS (36 CFR 212.1).

Motorcycle: A two-wheeled motor vehicle on which the two wheels are not side-by-side but in line.

Motorized mixed use: Designation of an NFS road for use by both highway-legal and non-highway legal motor vehicles.

Motorized trail (4WD trail): A travel way usually, but not always, less than 50 inches in width usually, but not always, available for use by all-terrain vehicles (ATVs) and/or motorcycles. These travelways may also be made available to high-clearance four-wheel drive vehicles, and may also be used by bicycles, horses, and hikers.

National Forest System road: A forest road other than a road which has been authorized by a legally documented right-of-way by a State, county, or local public road authority (36 CFR 212.1).

National Forest System trail: A forest trail other than a trail which has been authorized by a legally documented right-of-way held by a State, county, or local public road authority (36 CFR 212.1).

Non-highway legal vehicle: Any motor vehicle that is not licensed or certified under State law for general operation on all public roads within the State. Operators of non-highway legal

vehicles are subject to State requirements, if any, for licensing and operation of the vehicle in questions.

Off-highway vehicle (OHV): Any motor vehicle designed for or capable of cross-country travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other natural terrain (36 CFR 212.1).

Over-snow vehicle (OSV): A motor vehicle that is designed for use over snow and that runs on a track or tracks and/or a ski or skis, while in use over snow (36 CFR 212.1).

Private road: A road under private ownership authorized by an easement granted to a private party or a road that provides access pursuant to a reserved or outstanding right.

Public road: The road under the jurisdiction of and maintained by a public road authority and open to public travel (23 U.S.C. 101 (a)).

Qualified engineer: An engineer who by experience, certification, education, or license is technically trained and experienced to perform the engineering tasks specified and is designated by the Director of Engineering, Regional Office.

Red-sticker vehicle: Vehicles built since 2003 and registered pursuant to California Vehicle Code Book Division 16.5, Section 38160, which are not in compliance with the 1998 California Air Resources Board off-highway vehicle exhaust emission standards are issued a red sticker. Use of these vehicles may be restricted to specific days of the year and to specific areas in regions throughout the state. Areas on the Eldorado National Forest with red sticker restrictions include Mace Mill – Rock Creek and Barrett Lake.

Road: A motor vehicle route over 50 inches wide, unless identified and managed as a trail (36 CFR 212.1).

Road construction or reconstruction: Supervising, inspecting, actual building, and incurrence of all costs incidental to the construction or reconstruction of a road (36 CFR 212.1).

Road decommissioning: Activities that result in restoration of unneeded roads to a more natural state (FSM 7734).

Road maintenance: Ongoing upkeep of a road necessary to maintain or restore the road in accordance with its road management objectives (FSM 7714).

Road Subject to the Highway Safety Act: An NFS road that is open to public use in a standard passenger car, including a road with access restricted on a seasonal basis and a road closed during extreme weather conditions or for emergencies, but which is otherwise open to public travel.

Route: A road or trail.

Temporary road or trail: A road or trail necessary for emergency operations or authorized by contract, permit, lease, or other written authorization that is not a forest road or a forest trail and that is not included in a forest transportation atlas (36 CFR 212.1).

Terminal facility: A transfer point between the forest transportation system and forest resources served by the system or between different transportation modes, including parking areas, boat ramps and docks, trailheads, marine access facilities, airfields, and heliports (FSM 7705).

Trail: A route 50 inches or less in width or a route over 50 inches wide that is identified and managed as a trail (36 CFR 212.1).

Travel management atlas: An atlas that consists of a forest transportation atlas and a motor vehicle use map or maps (36 CFR 212.1).

Unauthorized route: A route that is not a forest road or trail or a temporary road or trail and that is not included in a forest transportation atlas (36 CFR 212.1).

Wheelchair or mobility device: A device, including one that is battery-powered, that is designed solely for use by a mobility-impaired person for locomotion and that is suitable for use in an indoor pedestrian area. A person whose disability requires use of a wheelchair or mobility device may use a wheelchair or mobility device that meets this definition anywhere foot travel is permitted (Title V, sec. 507c, of the ADA).